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GENDER AND ACQUISION OF AGRICULTURAL SCIENCE SKILLS IN SECONDARY SCHOOLS: VIDEO TAPED INSTRUCTIONAL APPROACH

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ABSTRACT

The study investigated the effect of video-taped instruction on the acquisition of slashing and raking skills in practical agricultural science among male and female secondary school students. Quasi experimental research design was adopted for the study because there was no randomization. The sample consisted of 80 students from two co-educational public secondary schools in Fika Local Government Area of Yobe State, Nigeria. Two research questions and two null hypotheses tested at 0.05 level of significance guided the study. Two instruments were used namely: Practical Agricultural Achievement Test (PAAT) with reliability coefficient of 0.72 and a Rating Scale Form (RSF). Data Analysis was done using mean and Analysis of Covariance (ANCOVA). The results indicated that male students taught slashing skills with videotaped instructional package performed better than females while the reverse is the case with the acquisition of raking skills. However this gender difference is not significant. Based on the findings of the study, recommendations were made that conducive environment should be provided for male and female students for the effective utilization of video-tape as instructional procedure when teaching practical agriculture in secondary schools.

KEYWORDS: Gender, Skill Acquisition, Slashing, Raking, Practical Agricultural Science

INTRODUCTION

Agriculture is the mainstay of economic growth and development of many developing countries including Nigeria. Livinus (2008) defined Agriculture as the human activity of cultivating crops and plantations for production of food and goods such as fibers, biofuels and animal feed. Osinem (2008) viewed agriculture as a science and systems which involve the cultivation of crops and rearing of animals for man's use. The science and systems of crop cultivations can be achieved through agricultural education.

Today, about 60 percent of the Nigerian population is employed in agriculture in one form or the other (Alkali, 2010). This fact has influenced the educational policy and practice of the country. The policy and objectives are tailored towards self-sufficiency in agricultural productivity. In order to achieve this policy objective, agricultural science has been made a compulsory subject at the senior secondary school level. Federal ministry of education (FME) (2007) stated that the objectives of agricultural education at the senior secondary school level are: to stimulate and sustain students' interest in agriculture, to enable students acquire useful knowledge and practical skills in agriculture, to prepare students for studies in agriculture, and to prepare students for occupations in agriculture. These objectives glaringly stressed the importance of agricultural education in national development.

To achieve the aforementioned objectives, Uko-Aviomoh, Okoh and Omatseye (2007) stated that the curriculum content of the senior secondary school consists of major concepts in agriculture such as production, protection and economics. Allied topics to these concepts were divided into six units namely: crop production, animal production, agricultural ecology and systems, agricultural engineering, agricultural economics and extension. It should be noted that there is continuity from Junior Secondary School (JSS) to Senior Secondary School (SSS) programmes in a way that concepts introduced at the JSS are broadly treated at the SSS level to produce articulated development of concepts that foster learning and comprehension by students.

The attainment of these objectives as laudable as they seem to be might not be realistic with the current traditional approach of teaching and learning in operation. Alkali (2010) said that with the current approach of teaching and learning which consists mainly of lecture method for example; only 3% of those who were trained in agricultural institutions take to agriculture after leaving school. He attributes this to ill preparation of the products whose training does not equip them to acquire useful knowledge and practical skills in agriculture. Olaniyan and Ojo (2008) reported that the increase in students' enrolment in Nigerian secondary schools these days has created large classes that make it difficult for a single teacher to manage the practical aspects. Shimave (2007) noted that most secondary schools do not have school farms, and where they exist at all, they fail to meet the standard and are thus ill-prepared to measure what school farms are set to measure. Again teachers use inappropriate instructional materials to teach agricultural concept or to augment the school farms for acquisition of skills. The graduates produced from such institutions cannot effectively demonstrate the basic skills they ought to possess after graduation and may not further their education since the needed knowledge is not likely there.

Numerous sources argued that the above situation brought about a friction in the agricultural education system. Nicodemus (2009) reported that the existing agricultural education system did not augur well for agricultural and economic development. Specifically, it was observed that instead of producing highly motivated and highly skilled farmers, the system produces graduates who love white collar jobs and lack essential farming skills

As a result of these inadequacies, the objective of National Policy on Education (FGN 2004) of having trained manpower who can impact necessary skills leading to the production of trained young farmers and other skilled personnel who will be enterprising and self-reliant is defeated. Samuel (2012) commented that Students who participated in nurturing school farm are bound to appreciate the subject (agriculture) more and even become stakeholders in agriculture. In secondary schools in particular, the familiarization of students with up-to-date methods for improved sustainable production of food that are applicable to their homesteads or farms is a potentially powerful tool for improving the household food security (Food and Agriculture Organization (F.A.O.) 2012). This could be achieved through teaching methods and utilization of appropriate instructional material.

Many researchers Aroh (2006), Isiaka (2007) stated that in classroom, learning could be made easier through the use of instructional technology. The use of instructional materials in teaching and learning of skills in agricultural science enhances students' achievement, increase interest of the students' and enthusiasm of teachers. It also facilitates retention of what is learnt; stimulates physical and mental activity by both students and teachers. Furthermore, it simplifies and gives vividness to explanations than talking; provides a cognitive bridge between abstraction and reality to students. It helps students to develop skills, scientific attitude and creativity. (Ehimere, Bonjoru, & Tsojon 2010)

In most cases, especially in the area of study, agricultural science teachers are fond of using conventional methods in teaching agriculture in secondary schools. These approaches include lecture or expository methods, discussion method and classroom demonstration methods. Aroh (2006) reported that in conventional method, teacher communicates ideas to learners by direct verbal discourse, sometimes called talk and chalk method. Supporting the observation, Mabekoje (2006), lamented that the method of teaching in Nigerian classrooms is talk and chalk and that the teachers parade themselves as central figure. The implication of this is that learners become discouraged and passive.

Technology has moved into the classroom, and it is now difficult to talk of achievement and attitude to learning without making mention of it. The use of technology makes learning easy, real and practical as it motivates learners, sustains interest and improves attitude to learning Isiaka (2007). The use of lecture method which floods Nigerian classrooms has been severally and severely criticized by scholars because it is boring, ineffective and makes learners passive to learning hence unable to acquire needed skills. Thus, it has become expedient to try other methods of instructions which involve the use of educational resources that can motivate the interest of the students and consequently improve their performance.

More so, the method of teaching used by teachers at any level will determine the nature of the graduates to be produced after a certain programme. Okoro, (2007) stated that if measurement procedures reveal that students have not fully understood what they were taught; the fault could be with the teaching methods adopted. Generally, poor performance of students in internal and external examinations calls for a careful assessment of the teaching methods adopted by the teachers. The West African Examination Council (W.A.E.C) chief examiners reports (2010) noted that inadequate exposure to practical agriculture affect students' performance in practical agriculture. Thus, candidates performance bothering on farm power, physical property of soil, crop improvement and poultry production was below average. The chief examiners advised teachers to make the teaching and learning of agricultural principles to be more deductive, analytical and problem solving rather than the traditional methods of rote learning and verbatim responses which no longer have place in modern test evaluation. Therefore, to provide a remedy to this educational hazard, a reliable instructional material to correct the present situation has to be employed. One of such resources is video. The use of video in teaching and learning is occupying centre stage in some classrooms. Video is an electronic device which provides aural and visual stimuli as well as motion.

Agriculture is a practical oriented subject and therefore requires practical activities and experiences in the field. Practical can be considered as a physical activity an individual engages in, in order to master a specific skill or to attend a specific objective. Aggarwal (2007) viewed practical work as a type of work aimed at providing direct experience to students and equally enable the students to fully understand principles, phenomena and processes by investigation. These include the training of boys and girls by means of practical work so that they may work with their hands as well as their minds for the promotion of better agricultural processes. Some of these practical skills to be acquired in agricultural science are slashing and raking which basic steps in land preparation.

Slashing is the process of cutting down grasses, weeds, shrubs and debris in order to provide a grass free land for agricultural production. The slashed grasses are permitted to dry (Mamudo 2012). According to Peter (2012), raking is the act of moving farmer's feet; rake leaves straight back and move with the rake as he/she walk toward the back to make heaps. These farm operations cannot be practically learnt through the use of traditional approaches. It can be used to

demonstrate the process of skill development and facilitate practical skills acquisition. Video presentation ensures that the content or skill to be learnt is organized in sequence, finished and prepackaged on a tape for use in future. It allows for the use of varieties of designs, variables such as the manipulation of instructional media which include, replay, mute and pause, close-up, questioning and practice to facilitate learning. Isiaka (2007) stated that Video enhances comprehension and retention. Real life activities like illustration, demonstration and observation of specimens in agriculture and the environment are brought to the learners in the classroom in a net and exciting package. Learning experiences that would have cost much (in terms of field trips) could be recorded with a video camera and shown on a television through VHS or VCD at a reduced cost. Environmental issues such as effect of erosion, bush burning, pesticides poisoning, HIV/AIDS, forest degradation, global warming and climatic changes could be taught through video. Video- taped instructions in teaching and learning of agricultural science may enhance students' performance especially where the class is over populated (Isiaka 2007). Video can equally be used to bring about gender equality in the process of presentation of the instructional package.

The role of gender (male and female) is very significant in the sustenance and development of any nation. Animasahum, (2005) argued that both boys and girls can perform brilliantly in learning if they are exposed to the same learning opportunities. This is critical for subjects like agricultural science which culturally may be classified as male or female's responsibility. It has become highly imperative therefore, to investigate the effect of video-taped instruction on students acquisition of slashing and raking skills in practical agriculture.

The theoretical frame work underlying the design and implementation of this study comes from the constructivist theory. Constructivists posits that when learners access information through their senses, the construction of new knowledge comes from an interaction between their existing knowledge and new experiences and ideas with which they come in contact in the natural world and their culture (Richardson 2003).

RESEARCH QUESTIONS

- What are the effects of video-taped instruction on male and female students' acquisition of slashing skill?
- What is the effect of video-taped instruction on male and female students' acquisition of raking skill?

HYPOTHESES

H_{01} There is no significant difference in the acquisition of slashing skill among male and female students taught with videotaped instruction and their counterparts taught the same topic using lecture method approach.

Ho_2 There is no significant difference in the acquisition of raking skill among male and female students taught with videotaped instruction and their counterparts taught the same topic using lecture approach.

METHODOLOGY

The study adopted quasi-experimental research design. Specifically, non-randomized pretest posttest control group design. The design was considered appropriate because intact classes were used. A sample size of eighty (80) SS2 students, made up 45 males and 35 females of Zadawa senior secondary school, Fika Yobe state were used. Two intact classes were sampled by simple random sampling. One intact class was randomly assigned to the experimental group while another intact class was randomly assigned to control group.

The experimental group comprised of 23 boys and 17 girls making it 40 students while the control group comprised of 22 boys and 18 girls making a total of 80 students. Practical Agricultural Achievement Test (PAAT) consisting of ten (10) practical agricultural science test items on identification of farm tools, handling of farm tools, and manipulation of the tool and the performance of the action/skill was used for data collection. A Rating Scale Form (RSF) was used to rate the performance of the students on the acquisition of slashing and raking skills. The instruments (PAAT and RSF) were designed by the researcher for the two groups. They were validated by two experts from agricultural education and expert from educational technology. A reliability co-efficient of 0.72 was obtained for PAAT using Spearman-Brown prophecy formula.

Prior to the commencement of the study, a pretest was administered to the groups and after the treatment for four weeks; a posttest was administered by the school regular agricultural science teachers under the supervision of the researcher. Mean was used to answer the research questions while the analysis of covariance (ANCOVA) was used to test the hypothesis.

RESULTS

The results of the study are presented according to the research questions and hypotheses.

Research Question One

What is the effect of video-taped instruction on male and female students' acquisition of slashing skill?

Table 1: Mean Scores of Male and Female Students Taught the Acquisition of Slashing Skill with Videotaped Instruction and Those Taught with Lecture Method

Gender	Pretest	Posttest	Mean Gain
Male N Mean	45 3.8222	45 5.9556	2.1334
Female N Mean	35 4.0286	35 5.6571	1.6285

Table 1 shows that males have higher mean gain score of 2.1334 in the acquisition of slashing skill than their female counterparts with gain mean score of 1.6285

Research Question Two

What is the effect of video-taped instruction on male and female students' acquisition of raking skill?

Table 2: Mean Scores of Male and Female Students on Acquisition of Raking Skill with Videotaped Instruction and Lecture Method

Gender	Pretest	Posttest	Mean Gain
Male N Mean	45 3.8444	45 5.4444	1.6000
Female N Mean	35 3.8857	35 6.0000	2.1143

Table 2 shows that females have higher mean gain score of 2.1143 than the males with 1.600 mean gain score in the acquisition of raking skills.

H01 There is no significant difference in the acquisition of slashing skill among students taught with videotaped instruction and their counterparts taught the same topic using lecture method approach.

Table 3: Analysis of Co-Variance (ANCOVA) of Students' Mean Scores on Acquisition of Slashing Skills by Method and Gender

Source	Type 111 Sum of Squares	Df	Mean Square	F	Sig	Decision
Corrected Model	97.161a	4	24.290	5.651	000	
Intercept	417.123	1	417.123	97.039	000	
Pretest	17 658	1	17.658	4.108	046	
Group	47.234	1	47.234	10.988	001	Significant
Gender	1.790	1	1.790	416	521	Not significant
Group Gender	15.466	1	15.466	3.598	062	Not significant
Error	322.389	75	4.299			
Total	3134.000	80				
Corrected Total	419.550	79				

Table 3 three shows that the F value is 10. 988 at significant level of 001. This shows that there is a significant difference. Hence the hypothesis rejected. Again the table shows that the F value for method by gender is.416 at .521 level of significance showing that there is no significant difference in the mean scores of male and females in the acquisition of slashing skill.

H_{02} There is no significant difference in the acquisition of raking skill among students taught with videotaped instruction and their counterparts taught the same topic using lecture method approach.

Table 4: Four ANCOVA of the Test of between Subjects Effects

Source	Type 111 Sum of Squares	Df	Mean Square	F	Sig	Decision
Corrected Model	70.375a	4	17.594	4.113	005	
Intercept	512.155	1	512.155	119.732	000	
Pretest	824	1	824	193	662	
Group	46.615	1	46.615	10.898	001	127
Gender	6.990	1	6.990	1.634	205	021
Group*Gender	21.498	1	21.498	5.026.	028	063
Error	320.812	75	4.277			
Total	2979.000	80				
Corrected Total	391.187	79				

Table 4 shows that the F value is 10.898 at significant level of .001. This shows that there is a significant difference. Hence the hypothesis is rejected. Again the table shows that the F value for method by gender is1.634 at .205 level of significance showing that there is no significant difference in the mean scores of male and females in the acquisition of raking skill hence the hypothesis is rejected.

DISCUSSIONS

The study shows that males performed better than females in the acquisition of slashing skill while females performed better in the acquisition of raking skill. However the ANCOVA indicated that the difference in the performance of male and female is not significant. This is also in support of the view of Animasahum (2005) that both boys and girls can perform brilliantly in learning if they are exposed to the same learning opportunities.

Implications

The implications of the study are that videotaped instructional package is effective for imparting of skill acquisition in agricultural science and therefore should be encouraged. More so both boys and girls can benefit maximally from videotaped instruction. This is very interesting, because schools that do not have enough land space for farm practice can use video tape to supplement and this will be of benefit to both male and female students.

CONCLUSIONS

Practical agricultural science is one of the secondary school subjects that can instill entrepreneurship tendency in youths if properly taught. Slashing and raking are among the basic steps in land preparation. Teaching practical agricultural science well involves exposing the learners to the actual experience which is generally gained in the farm. However in the absence of direct farm experience, acquisition of some of the skills can be gained through the use of videotaped instruction. Again both male and females can benefit maximally from videotaped instruction.

RECOMMENDATIONS

- Conducive environment should be provided for the effective utilization of video-tape as instructional procedure when teaching practical agriculture in secondary schools.
- Both males and females should be given equal opportunities for interaction during video instruction knowing that both can benefit maximally.

REFERENCES

1. Aggarwal J. C. (2007). Essentials of Educational Technology: Innovation in teaching-Learning; 2th edition. Delhi.
2. Alkali, M. (2010). The Case of Agriculture as the only Saviour to Nigeria's Deing Economy. Retrieved on 05/02/2012 from <hhttp://www.gamji.com/articles4000/NEWS.htm>
3. Animasahum, (2007). An Investigation into the Indifference of Girls towards the study of Physical Sciences in Nigerian Secondary Schools. Journal of the Science Teachers Association of Nigeria, 21(1), 106-116.
4. Aroh D. C. (2006). Effects of Video-Taped Instruction on Secondary School Students' Achievement and Interest in Mathematics. Unpublished M. Ed Thesis. University of Nigeria, Nsukka.
5. Ehimere, G.A., Bonjoru, F.H., & Tsojon, J.D. (2010). Improvisation of Instructional Materials in Teaching Agricultural Science in Secondary Schools of Taraba State: A Tool for Re-Branding Nigeria. Sahel Journal of Teacher Education, 2(1), pp, 24-27.
6. F.A.O., (2012). Teaching Vocational Agriculture in Schools: National Open University of Nigeria School of Science and Technology. 14/16 Ahmadu Bello Way, P.M.B. 80067, VICTORIA ISLAND, LAGOS. (2009). Agriculture in sub-Saharan Africa: policy news progress reports. Retrieved on 11/02/2012 from http://www.one.org/c/international/progressreports/1604/s
7. Federal Ministry of Education, (2007). National Policy on Education. Printing Division , Lagos.

8. Federal Republic of Nigeria (FRN, 2004), National policy on education (4th edition). Lagos: NERDE Press.
9. Isiaka, B. (2007). Effectiveness of video as an instructional medium in teaching rural children agricultural and environmental sciences International Journal of Education and Development using Information and Communication Technology. IJEDICT), (3), (3), pp. 105-114.
10. Livinus O. 2008). International journal of scientific research in education, agricultural Land Reserve: DOAG: Definition of Agriculture. Retrieved on 18/01/2012 from <http//www.a/c.gov.bc.ca/alr/what_is_ag_land.htm>
11. Mabekoje, O.O. (2006). Effects of Cooperative and Competitive Goal Structures on Secondary Students' Academic Achievement in an Aspect of English Language in Ogun State. An unpublished Advanced Research Seminar on Language and Language Education. Teacher Education Department, University of Ibadan.
12. Mamudo, Y. Y. (2012). Recommended (Protective) Practices for Major Cereals and Legumes. A Paper Presented at the Monthly Technology Review Meeting of Yobe State Agricultural Development Programme (ADP) Potiskum, Yobe State, Nigeria.
13. Nicodemus, O. A. (2009). Teaching Vocational Agriculture in Schools: University of Agriculture, Makurdi, Benue State. Retrieved on 13/11/2011 from <http://en.wikipedia.org/wiki/university_of_Agriculture_Makurdi>
14. Ogbondah, L. (2008). An Appraisal of Instructional Materials Used to Educate Migrant Fishermen's Children in Rivers State, Nigeria. International Journal of Scientific Research in Education, Vol. 1(1), 13-25. Retrieved on 12/9/2011 from < http://www.ijsre.com>
15. Okoro, O. M. (2007). Programme Evaluation in Education. Pacihic Correspondance College & Press Ltd. Pacific House, klm. 3 Mike Ajeobo Road, P.O.Box 21. Uruowulu-Obosi, Anambra state, Nigeria. Pp. 46.
16. Olaniyan D. A. & Ojo B. L., (2008). Challenges against Implementation of Introductory Technology Curriculum in Nigerian Junior Secondary Schools: European Journal of Scientific Research. ISSN 1450-216x vol. 24,(1), pp. 112-118 Retrieved on 05/02/2012 from < http://www.europeanjournals. Com/ejsr.htm>
17. Osinem E. C. (2008). Managing Agricultural Education and Training: Resources, Principles & Methods. ISBN: 978-8108-99-7. No: 104 Adbani Road, Enugu, Nigeria.
18. Peter, (2012). Cultural Practices for the Production of Cereal Crops in Yobe state. A Paper Presented at the
19. Monthly Technology Review Meeting of Yobe State Agricultural Development Programme (ADP) Potiskum, Yobe State, Ngeria.
20. Richardson, V. (2003). Constructivist Pedagogy. Teachers College Record, 105,1623-1640
21. Samuel, I. (2012). Cathing Farmers Young: Stimulating Youth Interest in Agriculture. Retrieved on 17/08/2012 from http://poeticfarmer.wordpress.com/tag/practical-
22. Shimave, A. G. (2007), An Evaluation of the Performance of Secondary Farms in Taraba state. An unpublish M. Ed Thesis. University of Nigeria Nsukka.
23. The chief examiners report WAEC, (2010).

24. Uko-Aviomoh, E. E.; Okoh, E. & Omatseye, B. O. J. (2007). Universal Basic Education (UBE) in Nigeria: Education, v127 n4 p558-568 Sum 2007; ISSN-0013-1172 Retrieved on 13/02/2012 from http://www.projectinnovation.biz/education.html